

**COOL NRG SUBMISSION  
18 APRIL 2008**

**GARNAUT CLIMATE CHANGE REVIEW**

**THE OPPORTUNITIES FOR RESIDENTIAL ENERGY  
EFFICIENCY BEFORE AND DURING A NATIONAL  
EMISSIONS TRADING SCHEME**

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18 April 2008

Dear Professor Garnaut

### **ENERGY EFFICIENCY AND ITS PLACE IN AN EMISSIONS TRADING SCHEME**

Please find attached a submission from Cool nrg Australia to the Garnaut Climate Change Review.

Cool nrg is a purpose driven, for profit, Australian company, committed to fast action on climate change. We have delivered the largest energy saving light-bulb projects around the world and are active in the UK, France, USA, China and Mexico.

My office has met with the staff of the Prime Minister, Ministers Wong, Garrett and Ferguson, their respective departments, and Roger Wilkins – presenting our views on the opportunities in Australia for mass scale, market driven energy efficiency.

This submission focuses on the challenge of transforming the potential gains from residential energy efficiency into cost effective and equitable demand side greenhouse gas abatement.

#### **Early Action Credits (EAC)**

Residential energy efficiency rapidly and cost-effectively reduces emissions. But there's a failure in residential energy demand – households aren't responding rationally to efficiency opportunities. An ETS won't correct this failure.

EAC offers a policy solution. It is the only opportunity for immediate residential 'demand side' abatement. And it assists an ETS by lowering the average cost of abatement in meeting 2020 targets. Without EAC there will be no emission reduction activity until after an ETS in mid 2010.

With electricity generators calling for free allocation of permits, EAC creates cheap credits that become permits under an ETS. The scheme also creates real household savings, lessening the impact of rising electricity prices – especially for low-income families.

I look forward to talking to you about this currently understated policy solution to climate change – and the opportunity residential energy efficiency presents for real emission reductions now.

Yours sincerely



Nic Frances, MBE  
Chairman, Cool nrg

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## *Introducing Cool nrg*

Cool nrg International Pty Ltd (Cool nrg) is a purpose driven, for profit enterprise that cuts residential CO<sub>2</sub> emissions through rapid, large-scale energy efficiency programs.

Cool nrg is led by Executive Chairman Nic Frances, MBE and board members Paul Ostling (former global executive Ernst & Young), Matthew Slatter (former CEO Tabcorp) and Andrew Laing (former Director of Finance, BP Asia).

Cool nrg has offices in Melbourne, San Francisco, Mexico City, Beijing and London. Coolnrg delivers high profile climate action campaigns that result in significant environmental, social and economic outcomes.

We are currently focused on the mass distribution of free energy efficient light bulbs.

If incandescent bulbs are replaced in every house worldwide, global electricity use will drop by 5% equivalent to cutting 400 Mt of CO<sub>2</sub> each year.

### **ACHIEVEMENTS TO DATE**

#### **The Great British Light Switch**

In January 2008 Cool nrg partnered with the Sun Newspaper and Scottish & Southern Energy in the world's largest energy-efficient light bulb campaign. Endorsed by Prime Minister Gordon Brown, Cool nrg:

- Distributed 4.5 million energy-efficient bulbs in one day
- Cut 390,000 t CO<sub>2</sub>
- Saved consumers £20 million off energy bills

#### **Change the Globe**

In February 2008 Cool nrg partnered with the Victorian Government, the Herald Sun Newspaper and Bunnings Warehouse in Victoria's largest energy-efficient light bulb campaign. Launched by Premier Brumby Cool nrg:

- Distributed 500,000 energy-efficient bulbs in one week
- Cut 300,000 t CO<sub>2</sub>
- Saved consumers \$40 million off energy bills

Cool nrg is developing further projects in China, Mexico, Europe and the US.

## ***Key Judgments***

1. While energy efficiency gains are well known, there's a failure in delivering 'demand side' gains in the residential sector.
2. A national Emissions Trading Scheme (ETS) won't adequately correct this failure.
3. Federal policy allowing market-based price incentives for residential energy efficiency can deliver significant abatement – and make energy efficiency a pillar of Australia's climate change strategy.
4. An Early Action Credits (EAC) scheme before an ETS, offers the best policy solution. EAC:
  - creates cost effective credits that are converted into ETS permits and offers a policy resolution to calls for free allocated permits
  - overcomes many existing barriers to residential energy efficiency and creates mass scale action and consumer change
  - supports an ETS by providing liquidity, lowering the average cost of abatement and addressing important equity concerns
5. Action on residential energy efficiency should continue after the commencement of an ETS with a national 'white certificate' trading scheme.

## **Scope of Submission**

This submission focuses on residential energy efficiency. It stems from the discussion of energy efficiency in the Garnaut Review paper: 'Emissions Trading Scheme: Discussions Paper March 2008'; and in particular the following statements:

'Energy efficiency is a market failure ... [E]ffective measures in this area can reduce the price of permits and the pressures for structural change.' (p. 6)

'Analysis may identify market failures in adjustment, particularly in relation to the supply of [energy efficiency] information that can justify complementary government action.' (p. 52)

## Key Judgment 1

### *Residential Energy efficiency gains are well known*

Much of the climate change debate is focused on long-term energy supply solutions. These are important. But a large-scale market transformation in residential energy efficiency presents the most viable short-term solution.

The global, regional and national opportunities for greenhouse gas (GHG) abatement through energy efficiency are well known. Many of these opportunities can be realised at zero or negative cost – specifically in the residential sector.<sup>1</sup>

#### **Globally**

The IPCC states that cost effective energy efficiency improvements could contribute to half the world's potential emission reductions by 2020.<sup>2</sup>

Particular to residential energy efficiency, the Vattanfall Climate map and the McKinsey Global Institute 2008 report identify large opportunities for residential savings.<sup>3</sup>

#### **Europe**

The EC estimates energy savings from meeting the current 9% energy efficiency target from 2008- 2016 would avoid emissions of 275 Mt CO<sub>2</sub>. That trend by 2020 would reduce emissions by 4.6% compared to 1990 levels.<sup>4</sup>

In the UK households account for 42 Mt or 28% of all CO<sub>2</sub> emissions. Energy efficiency from this sector will save 9 Mt CO<sub>2</sub> by 2020 under current policies.<sup>5</sup>

#### **Australia**

Australian studies have consistently identified opportunities to reduce energy demand and GHG gas emissions through a range of efficiency measures. Lighting, insulation improvements and water heating are all modeled at significant negative cost of abatement per tCO<sub>2</sub> –e.

The Sustainability Centre, for example, has modeled total emissions of 702 Mt CO<sub>2</sub> as Business as Usual to 2020. A substantial 'wedge' of emission reduction can be achieved from residential energy efficiency: 36 Mt CO<sub>2</sub> –e or 16% of total emission reductions based on a reduction to 480 Mt CO<sub>2</sub>.<sup>6</sup>

Particular to residential lighting, the Federal Department of Environment estimates that lighting presents around 12% of Australian household GHG emissions. Energy efficient lighting would save 4 terawatt hours of electricity – the equivalent to decommissioning one of Australia's smaller coal-fired power stations and 4 million tones of GHG emissions.<sup>7</sup>

The McKinsey Cost curve for energy efficiency abatement in Australia concluded that a reduction to 320 Mt CO<sub>2</sub> per year until 2020 is achievable with 25% from energy efficiency.

## Key Judgment 2

### *But there is a failure in the residential energy efficiency sector*

Despite the cost effective potential of residential energy efficiency against rising electricity prices, the market is not delivering these gains. Barriers include:

- **Financial:** price of efficient appliances and measures, hidden transaction costs related to distribution and installation
- **Information:** the perceived cost, imperfect information, lack of attention and priority, no knowledge of electricity pricing, knowledge of pay back periods
- **Structural impediments:** training and accreditation of tradesman to install energy efficiency appliances, availability of efficiency appliances
- **Behavioral and organizational factors:** economic irrationality in decision making, low priority of energy efficiency savings, energy efficiency gains offset by using more electricity: rebound effect
- **Split incentives:** renters installing energy efficiency measures in leased premises and departing before pay-back periods realised: 26% of Australians rent from a private landlord or from a state or territory housing authority<sup>8</sup>

These barriers are well known and often repeated – including in the Garnaut Climate Change Review, ‘Issues Paper 5: Transport, Planning and the Built Environment.’

But they are not insurmountable – and many are less challenging than barriers to implementing national carbon trading. Appendix 1 provides a summary of the barriers to energy efficiency and the ability of ESCOs and/or markets to correct them.

Some barriers represent a failure in the energy efficiency market; others represent challenges that can be addressed by energy suppliers or energy service companies (ESCOs). But even where suppliers and ESCOs are able to overcome some barriers, the incentive to do so depends on government policy.

Behavioral barriers are more difficult to gauge and may be part of the root causes of lower than expected uptake of measures. Many can be overcome by setting a market-based price for residential energy efficiency.

The UK Energy Efficiency Commitment (EEC), for example, has demonstrated that financial incentives can overcome many barriers and stimulate an uptake in households of energy efficiency measures. The expected savings from EEC by 2020 (across its three phases) is 5.6 Mt CO<sub>2</sub> and 78 TWh according to the UK Defra.<sup>9</sup>

In Australia, the NSW Greenhouse Gas Abatement Scheme (GGAS) illustrated the importance of policy in allowing the market to commercially deliver the full value of energy savings to households.

Table 1 summarises a Cool nrg analysis of NSW GGAS given the experience of the board and many staff working with Easy Being Green at the time. Easy Being Green

was accredited to distribute energy efficiency lights bulbs (CFLs) and water savings showerheads.

A full analysis by Cool nrg of NSW GGAS can be found at:  
<<http://www.coolnrg.com/downloads/NSW%20Case%20Study.pdf>>

**Table 1 NSW GGAS: Breaking down the barriers to Energy Efficiency**

<b>Barrier</b>	<b>NSW GGAS</b>
<b>Financial</b>	<ul style="list-style-type: none"> <li>- 900% increase in 6 CFLs and 1 showerhead 'climate change pack' uptake when given away rather than sold at heavily discounted \$5</li> <li>- Carbon credit value of CFLs greater than globe cost makes giveaway commercially attractive</li> </ul>
<b>Information</b>	<ul style="list-style-type: none"> <li>- Educational information included with giveaway</li> <li>- Engaged directly with consumer through newspaper partnership, front page ads, radio marketing, web sites and editorial campaign</li> </ul>
<b>Structural</b>	<ul style="list-style-type: none"> <li>- Distributed through shopping centers, door to door sales, community groups, post</li> <li>- Deep market penetration achieved: 3 million CFLS and 340,000 showerheads to 500,000 homes free of charge: cut 3.2 Mt CO<sub>2</sub></li> <li>- GGAS Total Abatement: 40.2 Mt CO<sub>2</sub>-e</li> </ul>
<b>Behavioral</b>	<ul style="list-style-type: none"> <li>- NewsPoll surveys after giveaway found that 75% of customers now more likely to take other actions to save energy and water</li> <li>- High installation rates of CFLs (+80%)</li> </ul>
<b>Split incentives</b>	<ul style="list-style-type: none"> <li>- Overcome by giving away CFLs and water savings showerheads</li> </ul>
<b>Rebound</b>	<ul style="list-style-type: none"> <li>- Rebound effect marginal in total savings of 10 Mt CO<sub>2</sub> from demand side abatement</li> <li>- Rebound a greater problem in developing countries where efficiency gains are eroded by unleashing suppressed demand</li> </ul>

### Key judgment 3

#### *An ETS won't correct the failure in energy efficiency*

Consumers do not make rational energy efficiency investments – even when presented with clearly cost effective options. Nor is the future value of energy savings a high priority in household spending decisions.

This economic irrationality by consumers can be conceptualized within the theory of the price elasticity of demand. Elasticity of demand in energy efficiency is driven by consumer choice, the availability of good quality substitutes, the proportion of household income the good represents and the savings made compared to the required effort.

These factors can be applied to an analysis of how a carbon price under an ETS will increase electricity prices and influence residential energy efficiency choices.

Table 2 itemizes an Australian household energy bill and factors in a range of carbon prices under an ETS: \$10, \$20 and \$45. The modeled household energy bills use a 1 ton CO<sub>2</sub> to 1 MWh pool coefficient. Figures are nationwide approximates and would vary as tariff price regulations are set by the respective State Essential Services Commission and independent bodies.

Table 3 calculates the cost increase on the Australian electricity bill from an ETS. Illustrating the benefit of residential energy efficiency, Table 2 and 3 show that:

Electricity prices will rise 6% with a carbon price of \$10  
 Electricity prices will rise 11% with a carbon price of \$25  
 Electricity prices will rise 22% with a carbon price of \$45

Based on an annual Australian electricity bill of \$1,050 a:

\$10 carbon price will add \$98 a year to total bill  
 \$25 carbon price will add \$182 a year to total bill  
 \$45 carbon price will add \$371 a year to total bill

An increase in electricity prices will bring energy use into sharper focus. But energy efficiency will only become *progressively* favorable at these prices. A carbon price and the shown increases won't drive mass scale, effective, or equitable energy efficiency.

As the Cool nrg modeling suggests the increase in residential electricity prices under an ETS will be both ineffective and inequitable. The price rise will not be high enough to drive any effective, mass scale residential energy efficiency. But low-income households – who spend more as a proportion of their total income on energy – won't be able to afford the extra costs in paying power bills.

**Table 2 Typical NEM Residential Customers Electricity Bill (approximate)**

	Current Price	% of total bill	2010 With Carbon at \$10	% of total bill	2010 With Carbon at \$20	% of total bill	2010 With Carbon at \$45	% of total bill
<b>Wholesale Energy Cost</b>								
Electricity (incl hedging cost, pool exposure) (\$/MWh)	55		55		55		55	
Carbon Price (\$/MWh)	0		10		20		45	
Pass Through of Carbon Price by Generators %*			100%		100%		100%	
Resultant Carbon Price Pass Through (\$/MWh)	0		10		20		45	
<b>Total Wholesale Energy Cost</b>	55	37	65	40	75	43	100	49
<b>Network Use Of System Charges</b>								
Distribution (\$/MWh)	57	38	59	36	59	33	59	29
Transmission (\$/MWh)	15	10	15	9	15	9	15	8
Other Costs - RECs, NGACs, Greenpower etc	8	5	9	5	9	5	9	4
Retail Margin	15	10	16	10	18	10	20	10
<b>Total (\$/MWh)</b>	150		164		176		203	
<b>Total (c/kWh)</b>	15		16.4		17.6		20.3	
<b>Carbon Price as a % of Total Electricity Bill</b>	0		6		11		22	

**Table 3 Cost increase on Australian electricity bill under an ETS**

<b>Carbon price under ETS</b>	<b>\$0</b>	<b>\$10</b>	<b>\$20</b>	<b>\$45</b>
<b>Additional % on electricity bill from Carbon Price</b>	0	6	11	22
<b>Total c/kWh under ETS</b>	15	16.4	17.6	20.3
<b>Total Electricity Bill (7 MWh /year average)</b>	\$1,050	\$1,148	\$1,232	\$1,421
<b>Carbon Price increase</b>	0	\$98.00	\$182.00	\$371.00

## **Key Judgment 4**

### ***Energy efficiency should be a pillar of Australia's emissions reduction strategy***

In the UK energy efficiency is a key component of the government's 2050 strategy of reducing emissions by 60%.

In Australia energy efficiency policy is currently 'complementary' to an ETS. Such a stance will not overcome the aforementioned barriers. But making energy efficiency a pillar of Australia's climate change policy will – and this requires a move to a market-based scheme.

At present a range of programs, regulations and subsidies drive energy efficiency in Australia. The Prime Ministerial Task Group on Emission Trading, 'The Report of the Task Group on Emission Trading' (May 2007) lists the major residential (and commercial) energy efficiency measures: the Greenhouse Challenge Plus Program; Energy Efficiency standards for residential and commercial buildings; National Appliance and Energy Efficiency Program; and NSW GGAS. The total estimated cost of abatement by 2010 is 32.7 3 Mt CO<sub>2</sub> for all these programs.

Regulations are important in setting minimum performance standards and license conditions. But regulatory measures have limitations. They have to be sustained for a genuine market transformation. The need to readjust regulatory measures and monitor compliance adds costs. Regulations are not sufficient to elicit the necessary scale of investment and behavioral responses required to generate significant GHG abatement (Box 1).

Grants and subsidies are important in filling immediate financial gaps and overcoming price barriers to energy efficiency. However there is little sustainability in uptake once a grant program finishes. And grants frequently only benefit those motivated, financially able and sufficiently informed to act.

Importantly, a policy that creates market based incentives for energy savings is additional to existing energy efficiency activities set by minimum energy performance regulations and grants.

**Box 1                      The MEPS bulb phase out: A better way?**

The implementation of a Minimum Energy Performance Standard (MEPS) by the Australian Government requires all incandescent light globes and CFLs imported after 1 October 2008 to have an efficiency level of at least 15 lumens per Watt.

Existing stocks of lower-performing light globes may still be sold until 1 October 2009. The MEPS necessitates phasing out incandescent light bulbs.

But until 1 October 2009 there will be no action affecting incandescent bulbs sales. And even after 1 October 2009, under a business as usual scenario incandescent bulbs will only to be replaced when they fail – and if householders don't store spare incandescents.

So the mandatory incandescent phase out is likely to take effect gradually and over a sustained period, having a negligible effect on consumer behavior or energy efficiency awareness. Nor will it deliver a rapid, market transformation – or protect low-income households against the requirement to buy more highly priced light bulbs.

## Key Judgment 5

### ***Policy allowing market-based interventions can deliver ‘demand side’ savings***

The energy efficiency market is currently too commercially risky for private investors. But private investors are central to market development. Government policy is important in bridging this gap and creating conditions attractive for market entrants.

There is no substitute for market mechanisms in moving consumers towards energy efficiency choices (Box 2). With the correct policy, energy efficiency can generate immediate GHG abatement with existing technology – and provide capital for the nascent Australian ESCO industry. While government policy frames the scale or delivery of the energy efficiency action market forces determine the method of delivering these savings and energy efficiency activities.

#### **Box 2 Mass scale energy efficiency campaigns: Lessons from the UK ECC**

The UK Energy Efficiency Commitment (EEC), now called Carbon Emission Reduction Commitment (CERT), show how government policy can stimulate market action in energy efficiency – and be run concurrently with an ETS.

EEC is an obligation on energy retailers to deliver residential energy efficiency – but with flexibility of delivery. The focus is on one outcome: cost effective reductions in residential energy use and GHG emissions.

EEC’s success can be attributed to putting obligations on a limited number of energy suppliers instead of numerous end users, as well as making management of the system simple. And the calculation of energy savings has been relatively easy because the measures have focused on insulation, heating, appliances and lighting.

The EEC also targets fuel poverty and equity issues stemming from rising electricity prices. Under EEC, half of the energy savings from suppliers went to the 35% of households on means tested disability benefits or tax credits. The weighting has now changed so that 40% of the benefits go to 40% of households who are on these benefits or are over 70.

In January 2008 Cool nrg worked under EEC to partner with the Sun Newspaper and Scottish & Southern Energy to deliver the world’s largest energy-efficient light bulb campaign.

Endorsed by Prime Minister Gordon Brown, Cool nrg distributed 4.5 million CFLs in one day; cutting 390,000 tCO<sub>2</sub>; and saving consumers £20 million per year off energy bills.

## **Key Judgment 6**

### ***Make energy efficiency a pillar of Australia's emissions reduction strategy through an Early Action Credits (EAC) scheme before an ETS***

#### **EAC realises the opportunity of residential energy efficiency savings**

An EAC scheme is the only opportunity for immediate and cost effective residential 'demand side' abatement.

The ETS will focus on 'supply side' reductions from power generators. And due to double counting the ETS will not cover 'demand side' residential energy efficiency. So a carbon price under an ETS will need to be very high and significantly increase electricity prices to force household energy reductions. The necessary high prices will create inequitable cost pressures for many low-income households.

#### **There will be no action to reduce emissions until an ETS commences in mid 2010**

There is a perverse incentive for ETS participants to defer any abatement activities until trading commences. This lack of pricing signals and incentives is already stalling the forward selling of electricity contracts. Further the lack of certainty is impacting on investment decisions surrounding energy assets. And as the EU ETS demonstrated, little significant emission cuts are likely in the first years of a trading scheme.

#### **EAC assists the successful introduction of an ETS**

An arc that allows emissions under an ETS to climb with a steeper reduction later in time has been suggested. But this depends on the development of low emissions technology such as Carbon Capture and Storage becoming viable and providing cheaper abatement in the future. The problem with this approach is that a higher volume of abatement is required over time. By contrast, demand side EAC provides cheap abatement prior to the commencement of trading that lowers the average cost of abatement under an ETS (See Appendix 3 Graphs 1 and 2).

The introduction of an ETS in Australian creates a 'step' change in how Australian business operates and invests in a new and uncertain market. Providing liquidity in the form of early action credits that become permits provides a gradual introduction to this new market.

EAC also helps resolve the permit allocation debate. With electricity generators calling for free permits, EAC creates cheap credits that become permits under an ETS. This creates liquidity and a carbon price signal before 2010. Importantly, EAC doesn't grant electricity generators complete protection and makes auctioning permits more feasible.

#### **EAC isn't a big regulatory impost**

Greenhouse Friendly accreditation standards and administrative frameworks can be used. Greenhouse Friendly has established methodologies for quantifying abatement, as well as issuing and tracking credits.

### **Additionality**

Abatement attribution is based on the contribution the activity has over and above what would have happened in its absence. This requires baselines for household energy consumption and rules for additionality. EAC activities must provide additional emission reductions compared with a business as usual scenario. In Australia, the additionality of all Greenhouse Friendly approved projects must be independently verified.

### **Double Counting**

To maintain the integrity of emission allowances for both an ETS and an EAC scheme, double counting of emissions between the two schemes must be avoided. This requires clearly identifying the emission reduction that can be attributable to these activities and the limits regarding reductions that are claimed.

Greenhouse Friendly energy efficiency accreditation quantifies emission reductions ‘up front’ allowing easy quantification of allowances to ‘set aside’ from the electricity generator permit pool in advance of ETS commencing in mid-2010.

Several international precedents exist that deal with double counting, including:

#### The JI model

The linking directive under the Kyoto Protocol Joint Implementation (JI) guidelines provides one model. Credits from any project affecting directly the emissions of an installation covered under the ETS needs to be compensated by the cancellation of an equal number of allowances by the operator of that installation. An equal amount of allowances under the national ETS cap must also be cancelled. (See Appendix 2 JI Double Counting – Joint Implementation: ‘The Romanian Model’<sup>10</sup>)

#### USA – EPA NOx Trading model

Seven US states have established Renewable Energy/Energy Efficiency (RE/EE) ‘set asides’ whereby allowances are given to project developers/implementers who reduce emissions.

Allowances are set-aside in anticipation of the implementation of RE/EE projects. The US EPA recommends 5-15% of NOx cap be set aside for RE/EE projects. Projects obtain allowances and trade them to emitters thereby obtaining the reward for emission reductions.

### **EAC creates real households savings**

Scarcity in the energy market will not drive energy efficiency gains because future demand and supply will remain largely unchanged out to 2020. Australian households will continue to grow and demand energy, and existing power plants will continue to largely meet this demand. An ETS will not fundamentally change these supply and demand levers in the next decade.

So in the short term – the next few years – there is likely to be a congruence of factors that will present a politically sensitive challenge to Government. These factors include rising household power prices; population growth increasing power demand; and continued calls for compensation from power generators that are providing an essential and ‘expected’ service to consumers.

The cost of permits under an ETS will result in higher electricity prices. Free allocation will not prevent this. Regardless of how allowances are distributed, the cost of meeting an emission trajectory target will be borne by consumers. Energy efficiency through EAC lessens the impact of rising electricity prices, especially for low-income families.

The Brotherhood of St Laurence claims that pricing carbon at \$25 per tone would add 2.5% to the weekly cost of living to the poorest households and potentially push another 266,000 households below the poverty line (as defined of 50% of the median income).<sup>11</sup>

As discussed earlier, Cool nrg has modeled price rises for an annual Australian electricity bill of \$1,050 based on \$10, \$25 and \$45 carbon prices.

Table 4 shows the amount that can be recouped from higher electricity bills by installing 6 CFLs and a low flow showerhead.

**Table 4 Cost increase on Australian electricity bill from ETS and CFL/ Showerhead savings**

<b>Carbon price under ETS</b>	<b>\$0</b>	<b>\$10</b>	<b>\$20</b>	<b>\$45</b>
<b>Additional % on electricity bill from Carbon Price</b>	0	6	11	22
<b>Total c/kWh under ETS</b>	15	16.4	17.6	20.3
<b>Total Electricity Bill (7 MWh /year)</b>	\$1,050	\$1,148	\$1,232	\$1,421
<b>Price increase</b>	0	\$98	\$182	\$371
<b>Yearly savings from 6 CFLs and 1 showerhead</b>	\$151	\$156	\$160	\$170
<b>% CFLs recoups off electricity price increase</b>	0	160%	88%	46%
<b>6 CFLs and Showerhead: Life time savings</b>	\$1188	\$1222	\$1252	\$1331

#### **EAC potential before an ETS**

Cool nrg modelling suggests the quantity of abatement available through simply retrofitting of households with 6 CFLs and 1 low-flow showerhead would results in emissions reductions of in excess of 65 Mt CO<sub>2</sub> over ten years.\* This would save 100,000<sup>#</sup> Mega Litres of water every year.

If Greenhouse Friendly accredited EACs were recognised under the ETS, a significant proportion of the aforementioned energy efficiency activity would be implemented.

Not only would such action provide an early price signal to emitters, improved liquidity and reduce the average cost of abatement during an ETS – it would also save households some \$7 billion over ten years.

Without EAC this rapid, low cost and demand side emission reductions will not be realised.

\* Excluding NSW/ACT due to GGAS activities, and TAS due to low emission factor.

# Showerheads save 20,000 litres per year (Sydney Water)

## **Key Judgment 7**

### ***Action on residential energy efficiency should continue after the commencement of an ETS with a national ‘white certificate’ trading scheme***

An EAC scheme can abate the ‘low hanging’ fruit of residential energy efficiency. But longer term gains in household energy savings require a market price to provide an incentive for commercial, mass scale and transformative action. The best policy approach is a white certificate trading system.<sup>12</sup>

A white certificate trading scheme is market based but requires strong regulation to function. There are varieties of state, regional and national schemes operating and soon to start in developed countries. In Europe the policy framework for white certificate trading is framed by the Energy Services Directive and has already been implemented in Italy and France. The manner of white certificate trading differs from country to country in Europe – but importantly all run concurrently with the EU ETS.

In Australia, the Victorian and South Australian governments are introducing forms of a white certificate scheme in 2009. NSW GGAS was established in 2003. In order to reduce the administrative cost and complexity of state-based tradable white certificate schemes, Cool nrg recommends the introduction of a harmonized, national white certificate-trading scheme based on a national energy efficiency target.

Such a scheme could be funded in part by revenue from auctioned ETS permits. Revenue from permits could also be used to fund an Australian agency that administers the energy efficiency market – akin to the UK Energy Saving Trust and the Carbon Saving Trust. This is a more efficient use of money than providing straight compensation to households for rising energy rises through tax cuts.

*Appendix 1 The market and ESCO ability to address energy efficiency barriers*

<b>Barrier</b>	<b>Can Energy Suppliers / ESCOs Address?</b>	<b>Market Failure?</b>	<b>Comments</b>
<b>1. Financial</b>	<b>Yes</b>	<b>No</b>	<b>Anyone can subsidise consumers</b>
- Up-front costs	Yes	No	Via subsidies
- Interest rates / access to capital	Yes	Probably not	Via low-interest loans or other instruments / offerings
- Low cost of energy relative to other costs	No	No	Only a market failure to the extent that e.g. full social costs of carbon are not included
<b>2. Hidden Costs</b>	<b>Partially</b>	<b>Partially</b>	
- Search costs for reputable suppliers	Yes	Possibly	Economies of scale and technical expertise provide an advantage
- Minimise disruption	Possibly	Possibly	Via quality control over suppliers
- Hidden costs of "behavioural" measures	No	No	measures, but are unlikely to know specific valuation of warmth, lighting, etc. Moreover, "DIY" adopters more likely to have self-motivation.
<b>3. Lack of Information</b>	<b>Partially</b>	<b>Partially</b>	<b>Public good aspects may merit subsidy for basic research</b>
- Identification of best-practice	Yes	Yes	Large-scale trials with results shared publicly; justification for government co-funding.
- Overall energy costs	Yes	Probably not	Improved and more frequent metering and billing
- Itemised energy costs	No	Probably not	Technically feasible but unlikely to warrant added cost at present
- Identification of possible measures	Yes	No	In the aggregate, and possibly for "similar" customers
- Identify household-specific measures (e.g. via energy audit)	Possibly	No	In some cases costs to suppliers may be higher, since households may be in a better position to identify measures themselves—for example, whether they have cavity wall or loft insulation, etc.
- Lack of trust in suppliers	Possibly	No	Via improved customer service and relationship management—difficult if reducing cost-to-serve is a primary business driver
<b>4. Risks and Uncertainty</b>	<b>Partially</b>	<b>Partially</b>	
- Energy prices and potential savings	Yes	No	Via fixed-price or other forms of contract
- Technical risks	Possibly	No	Via service guarantees (some already offer service contracts)
- Option value of waiting	No?	No	
- Length of tenure	No	Yes	Entirely up to household; mitigated by greater transparency of building performance
<b>5. Poorly Aligned Incentives</b>	<b>Partially</b>	<b>Yes</b>	<b>Some potential for new build</b>
- Landlord-tenant	No	Yes	Only insofar as they provide actual building performance
- Large-scale (new) building supply chain	Possibly	Yes	ESCOs could be involved in design / management of energy for new buildings—but would require greater acceptance of new benefit?
- Small building contractor supply chain	No	Yes	
- VAT levels	No	Yes	
- Other externalities	No	Yes	Although voluntary "green" products are a possibility.
<b>6. Psychological / Sociological</b>	<b>Partially</b>	<b>N/A</b>	<b>Not clear that supplier / ESCO strength is in influencing</b>
- Inertia / lack of awareness	Possibly	N/A	Via tariff incentive schemes and publicity, but current evidence is limited.
- Cultural shift	No	N/A	An upward struggle to make energy efficiency into an attractive consumer "lifestyle" issue.
<b>7. Regulatory</b>	<b>No</b>	<b>N/A</b>	<b>Under government / regulator control</b>
- 28-day rule	No	N/A	Does not appear to be necessary or sufficient to encourage expanded "Energy Services" style offerings.
- Unbundling of transmission and distribution	No	N/A	

Source: *Evaluation of Supplier Obligation Policy Options, February 2007*  
<http://www.berr.gov.uk/files/file38976.pdf>

### ***Appendix 2 JI Double Counting – Joint Implementation: ‘The Romanian Model’***

Romania has already approved several Joint Implementation project and intends to host JI projects in the future. See the National Strategy on Climate Change (adopted 2005).

To avoid double counting of emissions reduction from JI projects, Romania establish a JI reserve. The methodology when establishing the reserve includes:

The European Commission intends to publish guidance on avoiding double accounting emissions reductions that result from Joint Implementation (JI) projects.

In calculating the JI reserve, Romania has distinguished between direct JI and indirect JI. Direct JI refers to installations covered by the Directive that host JI projects that result in emissions reduction at the installation itself.

Indirect JI refers to JI projects taking place outside the EU ETS but indirectly affecting covered installations under the EU ETS and are those JI projects, which have effect on the emission reductions from the national grid (it has been taken into account only for 2008-2012 period). ERUs can only be produced in the period 2008-2012. A JI reserve, therefore, has only been established for Phase II.

#### **Direct JI**

The direct JI reserve is estimated on the basis of the inventory direct JI projects that have already obtained an endorsement or an approval by the Romanian Government, or that have submitted a Project Idea Note (PIN) for endorsement.

For each installation the expected number of ERUs that shall be produced in the period 2008-2012 is estimated.

#### **Indirect JI reserve**

The indirect JI reserve is calculated on the basis of the inventory of indirect JI projects that have been endorsed or approved by Romania, or that have submitted a PIN for endorsement.

The indirect emissions reduction resulting from these projects are estimated.

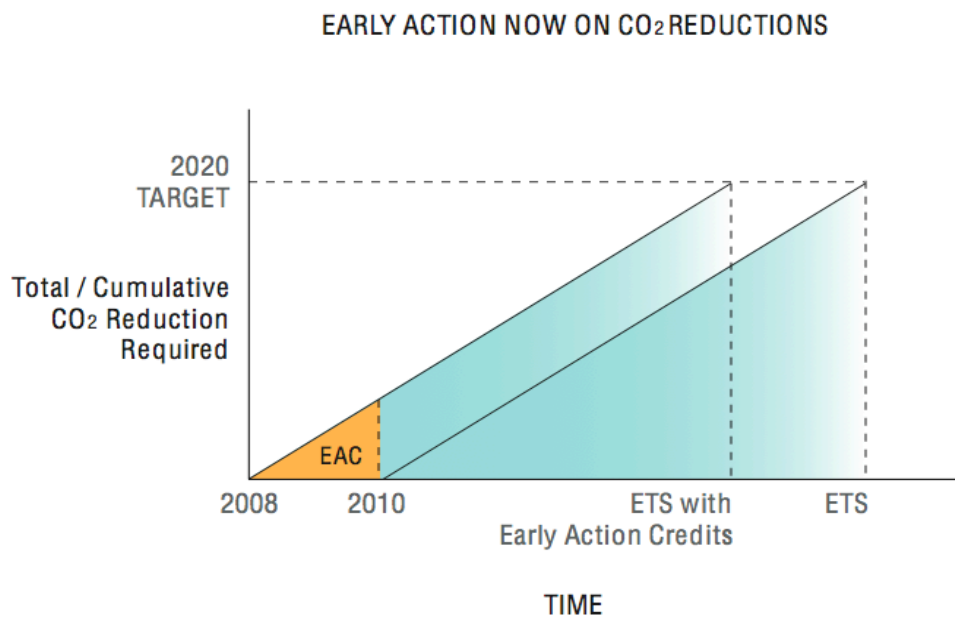
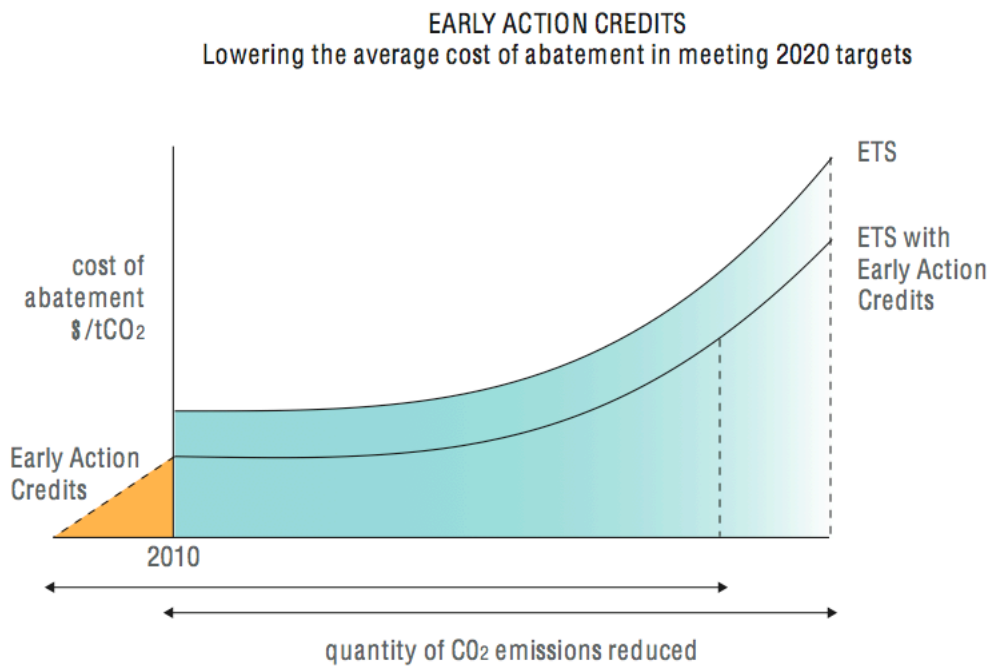
The indirect JI reserve is subtracted from the total amount of allowances allocated to the energy sector. At the moment the monitored indirect emission reduction from the JI project have been verified, the same amount of allowances from the indirect JI reserve is cancelled.

#### **Disposal of surplus allowances**

For the period 2008-2012, any remainder in the indirect JI project reserve shall be auctioned.

*Source: Ministry of Environment, Water Management, ‘Romanian National Allocation for 2007 and 2008-2012’ (December 2006)*

*Appendix 3 EAC abatement and price benefits before and during an ETS*



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<sup>1</sup> Negative costs are a net financial benefit to the economy over the lifecycle of the abatement opportunity.

<sup>2</sup> Intergovernmental Panel on Climate Change (IPCC) Climate Change 2007: Mitigation: Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge: Cambridge University Press, 2007); Garnaut Climate Change Review, 'Issues Paper – Forum 5: Transport, Planning and the Built Environment,' p. 9.

<sup>3</sup> Vattanfall Global Climate Impact Abatement Map accessed at <http://www.vattenfall.com/climatemap>; McKinsey and Company, An Australian Cost Curve for Greenhouse Gas Reduction (Sydney: McKinsey and Company, 2008); Garnaut Climate Change Review, 'Issues Paper – Forum 5: Transport, Planning and the Built Environment,' p. 9.

<sup>4</sup> 'Economic Evaluation of Carbon Dioxide Emission Reduction in the Household and Services Sectors in the EU' accessed at [http://ec.europa.eu/environment/enveco/climate\\_change/pdf/households\\_execsum\\_update.pdf](http://ec.europa.eu/environment/enveco/climate_change/pdf/households_execsum_update.pdf)

<sup>5</sup> Department of Trade and Industry, 'UK White paper on Energy' (May 2007) accessed at <http://www.berr.gov.uk/files/file39387.pdf>

<sup>6</sup> See The Sustainability Centre website, accessed at <http://www.sustainabilitycentre.com.au/publics.html>

<sup>7</sup> Department of Environment, Water, Heritage and the Arts, 'Phase Out of Inefficient Light Bulbs,' accessed at <http://www.environment.gov.au/settlements/energyefficiency/lighting.html>

<sup>8</sup> Australian Bureau of Statistics, Year book 2007

<sup>9</sup> Defra, UK Energy Efficiency Action Plan (2007), quoted in IEA, 'Promoting Energy Efficiency Investments: Case studies in the residential sector,' (2008), p 251.

<sup>10</sup> Ministry of Environment and Water Management, 'Romanian National Allocation for 2007 and 2008-2012' (December 2006)

<sup>11</sup> Brotherhood of St Laurence & National Institute of Economics and Industry Research, 'The Impact of carbon prices on Victorian selected household types – A preliminary analysis,' March 2007.

<sup>12</sup> R. Passey, I. MacGill & M. Watt, 'A Review of Market-based Schemes to Drive Energy Efficiency,' Centre for Energy and Environmental Markets (January 2008) accessed at <http://www.ceem.unsw.edu.au/content/Pubs.cfm?ss=1>